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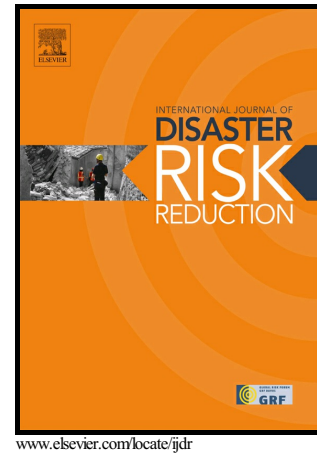
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Stern Mwakalimi Kita



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Urban vulnerability, disaster risk reduction and resettlement in Mzuzu city, Malawi

Stern Mwakalimi Kita^{1,2,*}

¹PhD Candidate, Department of Geography, University of Sussex, United Kingdom.

² Chief Mitigation Officer, Department of Disaster Management Affairs, Malawi.

stenkita@gmail.com

s.kita@sussex.ac.uk

***Correspondence addresses:** University of Sussex, School of Global Studies, Geography, Arts Building C, Falmer, Brighton, BN1 9SJ, UK. **Mobile Phone:** +447448781729/+265999430940

Abstract

For most developing countries at risk of disasters and climate change, adopting structural measures to reduce disaster risks remain a challenge. This paper presents findings of a study conducted through a mixed methods design in a flood risk city in Malawi, Sub-Saharan Africa. The study assesses the city's vulnerability to floods and actions being taken to reduce the risks. It then investigates how resettlement is being promoted as one such risk reduction measure. The study finds multiple vulnerability factors, including unsafe construction practices, poor drainage systems, unregulated solid waste disposal, institutional incapacity, inadequacy of land, settlements in high risk areas, deforestation, siltation of rivers and national disaster risk reduction policies that neglect urban areas. However, efforts to tackle underlying causes of vulnerability are wanting. One positive programme is a slum upgrading

pilot project implemented by non-state actors that also lacks government support. In the case of resettlement, its planning and execution is fraught with multiple challenges emanating from haphazard planning and lack of community participation. The paper argues that the emphasis on resettlement is obscuring the key drivers of vulnerability, while simultaneously exposing both resettled and those left behind to further risks. It, therefore, calls for caution when planning and implementing disaster risk reduction policies that have the potential to create new forms of vulnerability to hazards or exacerbate them.

Abbreviations

CEO, Chief executive officer; DRM, disaster risk management; IHS3, Third integrated household survey; NSO, National statistical office; UN-HABITAT, United Nations Human Settlements Programme ; UN-ISDR, United Nations International Strategy for Disaster Reduction

Key words: resettlement, disaster risk reduction, urban resilience, Malawi, Mzuzu, climate change adaptation

1.0 Introduction

Prohibitive land markets and high levels of poverty force large numbers of rural-urban migrants to occupy informal settlements, which are often the only places they can afford (Miles et al., 2012; Isunju et al., 2016). Most informal settlements are located in areas prone to multiple hazards, often in land that is ignored by the rich because of its susceptibility to disasters such as floods, earthquakes, landslides and fire (Tipple, 2006; Bull-Kamanga et al., 2003; Moser, et al., 2010; Baker, 2012; Usamah et al., 2013; Castro et al., 2015).

Vulnerability of most urban poor to natural disasters is, therefore, attached to the places they occupy: those with adequate resources are able to acquire better land that is safer from hazards. People living in informal settlements tend to occupy sub-standard houses that are close to one another and that disturb natural drainage systems and waterways (Wisner et al., 2004; Tanner et al., 2009).

A number of additional factors have been identified as major drivers of risk in cities and other urban areas. Population concentration, developmental densities, unplanned urbanisation and regulatory shortfalls all put urban areas at great risk (Wisner et al., 2004; Wamsler et. al., 2013; Johnson and Blackburn, 2014; Malalgoda, 2014). Some of these can be manifested through physical aspects such as the informal nature and type of construction prevalent in urban areas. In addition, the social facet can be affected where communal networks and kinships that are strong in rural areas can become weaker (Sharma et. al., 2015). Lack of authority and well-qualified personnel to enforce regulations in urban areas also contribute to hazards vulnerability through unsafe settlement and construction practices (Green, 2008). Surjan and colleagues (2015) add that failure to ensure proper construction in cities is due to prevalence of an informal untrained construction sector and limited awareness by the citizenry on building bylaws. A number of DRR measures are being promoted in urban areas, including population resettlement from high risk areas (Correa, 2011; Chen et al., 2017; Arnall, 2013; Ferris, 2011, 2012).

The aim of this study was to investigate the level of vulnerability to flood risk and how resettlement is being used to reduce flood risk in Mzuzu city, Malawi. In April 2016, the city of Mzuzu experienced the worst floods ever recorded since its establishment. 15 settlements were affected, 19,000 people were displaced, seven people died and seven camps were set up to accommodate the displaced. The flood effects were mostly felt in informal settlements. Following the disaster, the city decided to implement a resettlement programme

as a long-term risk reduction measure targeting some of those whose houses had collapsed or were badly damaged. While previous empirical studies have tended to focus on resettlement processes that have already been completed, mostly within rural settings, this study contributes to the literature by primarily presenting the intricacies that go into the planning of a resettlement scheme within an urban setting in a low-income country.

To achieve this, the study asks: What are the key vulnerability factors to flood risks in the city? To what extent is urban DRR considered a priority by the city and the national DRM architecture? How and why is resettlement used as a risk reduction measure in the city? What other DRR strategies are being used and how effective are they? The rest of the paper is organised into five key sections: the first section introduces the study's analytical framework before reviewing the literature on urban risk and resettlement. This is followed by the methodology section. The third section presents the study's results and then discusses these findings in the fourth section. The last section concludes the paper.

1.1 Analytical framework

The study adopts an analytical framework based on the pressure and release (PAR) model in understanding the broader vulnerability factors to floods and related risk reduction efforts. The PAR model was initially developed by Blaike et al. (1994) and revised by Wisner et al. (2004) and has since been widely used in disaster risk reduction studies (e.g. Asgary and Halim, 2011; Manyena, 2012; Nirupama, 2012; Arnall, 2015; Islam and Lim, 2015; Oliver-Smith, 2016). Central to the model is its demonstration that disasters do not simply result from hazards, but occur when a hazard meets a vulnerable population, creating some kind of pressure. Reducing disaster risks, therefore, requires releasing the pressure, which demands consideration of both the hazard and vulnerability. The relevance of the model to this study is

twofold. As argued by Manyena (2012), the utility of the PAR model lies in providing a framework that can be used to analyse the hazard and vulnerability context contributing to disaster occurrence. In addition, the model can assist in understanding whether the measures being adopted are actually reducing disaster risks or not.

According to Wisner et al. (2004) and Adger (2006), vulnerability to disasters has multiple and interconnected causes, which can be physical, social, economic, political or environmental. The PAR model posits that vulnerability is embedded within the social structure and progresses from *root* or *underlying causes*, *dynamic pressures* and *unsafe conditions*. Root causes can include climate change, lack of regulations to control unsafe practices, failure by government to enforce its regulations, gender relations and limited access to resources. Dynamic pressures result from the root causes and can be structures or processes such as social networks, lack of local institutions, rapid urbanisation, deforestation, leadership and governance systems or religion. Unsafe conditions are linked to dynamic pressures and include location in high risk areas, residing in unsafe buildings and low income.

1.2 Urban vulnerability and disaster risk reduction

A city's vulnerability to disaster risk is multi-faceted. Addressing urban risks requires looking at the various core components and functions of a city that can be at the centre of vulnerability, including urban planning, public service delivery, disaster risk management (DRM), governance, safety and crime (Wamsler et al., 2013; Surjan et al., 2015). Since these often fall under different departments within a city, coordination among players working within the different sectors is crucial. It also implies that dealing with urban risks requires presence of professionals not just in city planning or governance but also in disaster risk

reduction, climate change adaptation and related areas. These would spearhead and coordinate resilience building efforts. Their absence tend to push disaster risk reduction or climate adaptation to the periphery: unlike DRM specialists, urban planners and managers tend to concentrate more on routine risks (Bull-Kamanga et al., 2003).

The complexity and interactions of urban systems also make it difficult to isolate specific impacts to sectors that climate change and climate variability would have, which calls for holistic risk reduction approaches that are not only multi-faceted but also synergistic (Carter et al., 2015). Scholars have argued that addressing disaster risks requires a comprehensive approach that looks at all risk influencing factors from a developmental perspective, which are hazards, vulnerability and weaknesses in response and recovery systems (Wisner et al., 2004; Adger, 2006; Manyena, 2012; Wamsler et al., 2013; Islam and Lim, 2015). Reduction of urban vulnerability to disaster risks is, therefore, not just about building stronger structures, but involves the whole city fabric (Godschalk, 2003). Johnson and Blackburn (2014) have identified four common activities that are critical to ensuring urban resilience to disasters such as floods: setting up urban institutional structures responsible for disaster risk reduction, integrating disaster risk reduction into urban planning regulations, building physical flood mitigation structures and enhancing awareness, education and training programmes. In addition, presence of proper drainage systems, strong emergency response systems, well designed buildings and strong regulatory and enforcement systems are important elements of urban resilience (Desouza and Flanery, 2013).

1.3 *Resettlement as disaster risk reduction*

Where people have settled in high risk areas such as wetlands, resettlement from such places could be a means to reduce disaster risks (Correa, 2011). In most cases, resettlement is voluntary and assisted, involving a number of stakeholders and incentive mechanisms (de

Sherbinin et. al., 2011). For an involuntary resettlement process to succeed, some people ought to volunteer to participate (Hammond, 2008).

The literature on resettlement shows variations in resettlement adoption and success, with a preponderance of failures. While resettlement can provide opportunities for affected households to improve their livelihoods (Oliver-Smith and de Sherbinin, 2014), it has often been found that households face numerous challenges as they reconstruct their livelihoods following resettlement (Arnall, 2013; Chen et al., 2017; Mavhura et al., 2017). A number of factors in the design, construction, implementation and delivery of resettlement programmes contribute to its success or failure. Studies have shown that the willingness to resettle and resettlement success increases with the amount of compensation, settlement destination, level of participation by those being resettled and size of land offered to households (Carmona and Correa, 2011; Correa et al., 2011; Arnall, 2013; Artur and Hilhorst, 2014; Vlaeminck et al., 2016; Chen et al., 2017). Long-term sustainability of resettled communities require, among others; productive livelihoods, building community cohesion, provision of opportunities for employment and easy access to infrastructure and social services (Keraminiyage & Piyatadsananon, 2013; Usamah & Hyaden, 2012).

Michael Cernea (1997, 2000) argues that resettlement should be properly planned and implemented as experience has shown that if not planned and implemented well, the consequences on those displaced are devastating. His impoverishment risks and reconstruction model for resettling displaced populations posit that poorly planned resettlement can lead to landlessness, joblessness, homelessness, marginalisation, increased morbidity, food insecurity, loss of access to common property resources and social or community disarticulation. It has, therefore, been argued by scholars and practitioners that resettlement should be considered as a measure of the last resort (Ferris, 2011, 2012; Oliver-Smith and de Sherbinin, 2014).

Where resettlement is nevertheless considered as an option for disaster risk reduction or climate change adaptation, it should be accompanied by appropriate policy changes to curb return to the risky areas (Correa et al., 2011). Regulating the reclaimed land is crucial as evidence shows that without proper regulation, people will return and occupy the same areas (Bowman and Henquinet, 2015). This, therefore, calls for proper planning, rehabilitation and management of the land that has been reclaimed, with necessary monitoring mechanisms in place. Carmona and Correa (2011) cite examples of policy options used in Latin America, which included: development of regulations banning settlements in risky areas in Argentina, Colombia and Guatemala; prohibition of investments in risky areas in Guatemala, and; turning the land into public investments such as public green zones in Argentina, ecological park in Colombia and stream canalisation and road projects in Brazil. Evidence further suggests that the choice of policy options should be carefully selected and contextualised as some may have little effect. In Mozambique, for instance, government prohibited the provision of social services in the reclaimed area to discourage reoccupation after resettlement. However, some people who had voluntarily relocated still returned to the areas (Artur and Hilhorst, 2014).

2.0 Methodology and study location

2.1 Study site

Mzuzu city is located in the northern part of Malawi, sub-Saharan Africa. It lies on the border between Mzimba and Nkhatabay districts and covers an area of 143.8 km². It is divided into 15 administrative wards and its 2017 population was estimated at 254,891 (NSO, 2008). It was established in the 1940s as a centre for tung production by the colonial

government. In mid-1950s, the global price for tung oil slumped, which led to production cuts at the estate. Consequently, a number of buildings and other structures became obsolete and were offered to government. This led to the establishment of a regional administrative centre for the north (Haskard, 2005; Williams, 1969). In 1980, Mzuzu became a municipality and five years later it became the third city in Malawi. More than 60 percent of the population in the city live in informal settlements (UN-HABITAT, 2011).

Mzuzu receives around 1,200 mm of rainfall annually and has experienced flash floods almost every year over the past decade, with the most serious flooding events recorded in 1991 and 2016. Inter-annual rainfall variability over the city is very common (fig. 1), though no statistically significant trend can be observed over the period 1971 to 2015. Combination of hilly and low-lying areas in the city provide multiple risks. 75 percent of the available land in the city is customary land, with only 15 percent being public (UN-HABITAT, 2011).

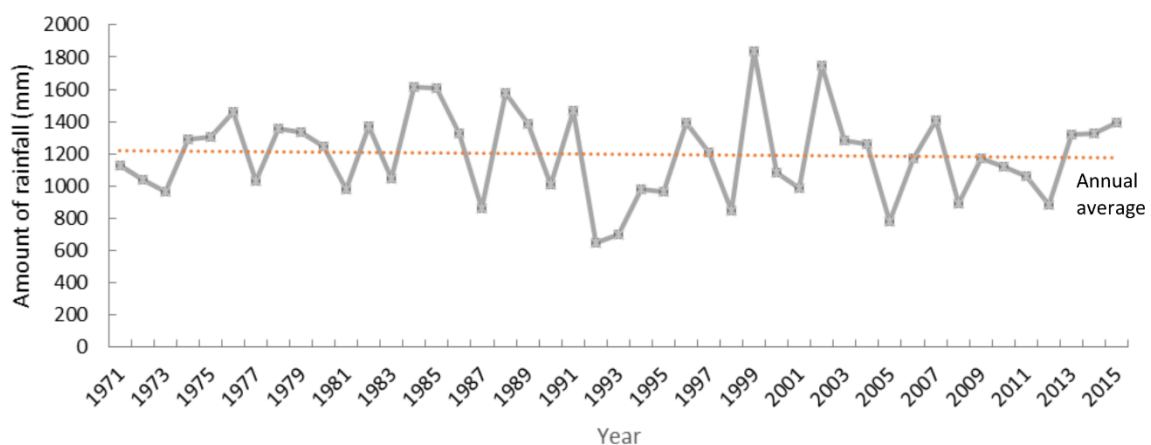


Figure 1: Annual rainfall variability for Mzuzu city, Malawi, 1971-2015

Masasa and Mchengautuwa wards (fig. 2) were selected as sites for focus groups, semi-structured interviews and observation because they had the largest number of people affected by the April 2016 floods. Five of the seven people that died as a result of the disaster were from Masasa ward. Masasa also accounted for the largest proportion of households to be resettled. According to city records, both sites are divided into east and west, with the former having a population of 18,400, while the latter has 17,984. Both sites are informal settlements and are particularly prone to floods and mudslides. As informal settlements, both are characterised by high population densities, exposure to multiple hazards, poor road networks, poor drainage systems, high levels of poverty, absence of solid waste collection services and limited access to potable water and electricity. The study also discusses a slum upgrading project implemented in Salisburyline, another informal settlement that was also affected by the 2016 floods.

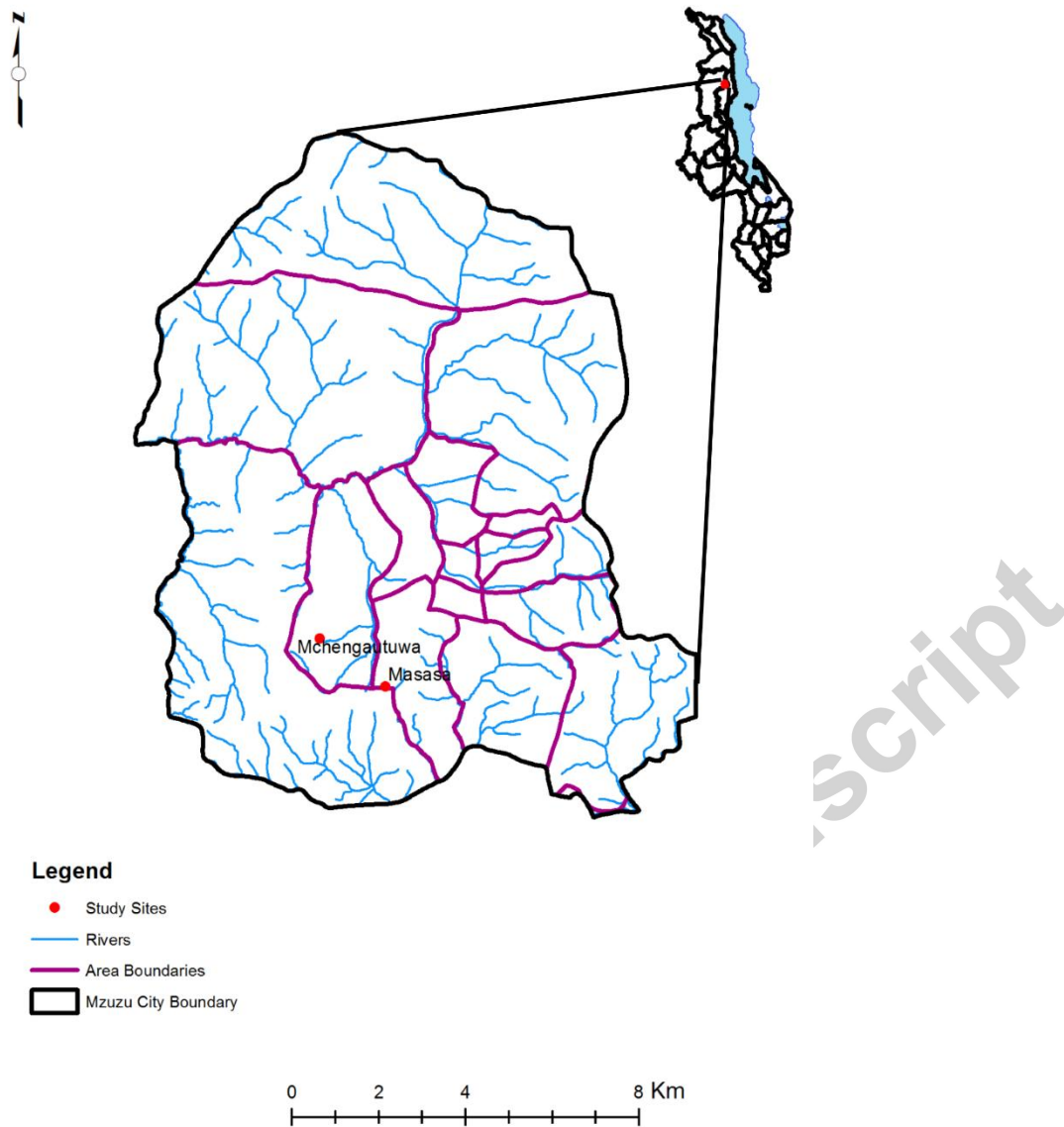


Figure 2 Location of Mzuzu city and study sites in Malawi

2.2 Methodology

This study uses a mixed methods design, combining qualitative and quantitative approaches. Primary data were collected through focus groups, semi-structured interviews, participant observation, document analysis and use of secondary datasets from the third integrated household survey (IHS3). Four focus groups were conducted in two informal settlements in Mzuzu city - Masasa and Mchengautuwa – with displaced people. Each focus

group had between eight and 11 participants with a mixture of men and women and lasted about one and half hours. In addition, semi-structured interviews were conducted with key informants who included three local leaders and three disaster management committee members from Masasa and Mchengautwa, six Mzuzu city council officials, 20 officers from central government, 11 from local government, 19 from local and international non-governmental organisations (NGOs), seven from development partners and six from academia.

Most of the data collection was conducted between May and August 2016. Respondents were purposively selected: at local level these were those who were directly affected by the floods. City officials and other key informants at city and national level were those with disaster risk reduction or closely related responsibilities. The interviews and focus groups focused on experiences with flood disasters; vulnerability and factors increasing vulnerability of the population; current disaster risk reduction policies and practices; key actors and their role in building disaster resilience, and challenges in risk reduction efforts. On resettlement, questions dwelt on the planning process, challenges being experienced, expectations and perceptions of communities on resettlement.

Information was also gathered through participation in meetings and field activities related to disaster risk reduction and response. Physical observation of the settlement patterns, livelihood practices and risk factors within informal settlements was also done in Mzuzu city through transect walks. During the transect walks, informal interviews with some of the community members encountered were also conducted. The study also used survey data accessed from the National Statistical Office (NSO) from the third integrated household survey, conducted between 2010 and 2011 across the country. The IHS is a national survey that is conducted every five years across Malawi to assess key aspects of household welfare. The survey focused on key areas of poverty and income, household enterprise, assets and

consumption, agriculture, food security, stresses and shocks, housing and environment, education, health and other household socio-economic activities. It used a stratified two-stage sampling technique, where the first stage involved selection of enumeration areas using probability proportionate to size for each district. In the second stage, the list of households in each selected enumeration area was used as the sample frame, from which respondents were selected using systematic random sampling. The IHS3 interviewed 384 households in Mzuzu city (NSO, 2012).

A number of national and city policy, regulatory and operational frameworks were also reviewed. The documents selected were those that had direct relevance to the research questions and included the national policies on disaster risk management and climate change, Mzuzu city's urban plan and its draft disaster risk management plan, draft national urban policy, national disaster profile, project reports from NGOs, minutes of meetings and reports related to the flood disaster and resettlement. The Department of Climate Change and Meteorological Services provided the rainfall data used in the study.

Quantitative data were analysed using IBM SPSS Statistics 23 and MS Excel to produce descriptive statistics and graphs. Transcribed qualitative data from focus groups and interviews were merged with field notes and analysed using thematic and constant comparison analysis (Charmaz, 2003; Braun and Clarke, 2005; Onwuegbuzie et al., 2009; Bryman, 2016). The use of multiple categories of research participants to look at the same or very similar issues necessitated these analysis approaches for qualitative data.

3.0 Results

3.1 Hazards and vulnerability

During interviews and focus groups in Masasa, Mchengautuwa and with other key informants, floods, drought, mudslides, environmental degradation and disease outbreaks were cited as the major hazards faced by people in the city. The survey data shows that high food prices, high cost of agriculture inputs and illness of a household member are the most predominant shocks in the communities (fig. 3). While floods and drought may not be considered as common shocks that communities experience from the IHS3 data, most of the challenges cited during the survey, such as high food prices, are often linked to drought and floods in the Malawi context.



Figure 3: Common shocks experienced in the last 12 months in Mzuzu according to the IHS3

Two closely related vulnerability factors commonly cited by key informants and focus group participants were poverty and the settlements occupied. The majority of the population in Mzuzu are migrants who live in 12 informal settlements spread across the city. City officials said they consider informal settlements illegal and provision of social services is limited. The survey data shows that 56.9 percent of the population in Mzuzu city live in permanent houses, 21.6 percent in semi-permanent and 21.6 percent in traditional housing

units¹. Most of the semi-permanent and permanent houses are located in informal settlements. The survey data also shows that 50 percent of the population live in rented houses, while 43 percent live in houses they own. Physical observations during transect walks in Masasa and Mchengautuwa revealed several ‘unsafe conditions’ in construction practices, with several houses of poor quality, overcrowded and haphazardly located in high risk areas such as on hill sides prone to mudslides and on the edges of rivers and swamps.

Most of those who occupy informal settlements come from rural areas (fig. 4). Economic factors drive most of the migrants into the city, with the top three reasons for migrating being: looking for work (24.2 percent), starting new job or business (23.2 percent) and returning from work elsewhere (19.8 percent). Asked why they settle in such high risk areas, most claimed they cannot afford planned low-density locations, where land or rent costs are exorbitant. Some choose to live in denial and underplay the threat of disasters, feeling safe where they are. In the words of one community leader in Mchengautuwa:

Every day we wake up we see the city, and we have been close to it all our lives. We face minor disasters every year but survive. Our houses were affected this year because the rains fell continuously for two weeks, which has not happened before. We are safe where we are.

¹ *Permanent structure*: A permanent structure is one having a roof made of iron sheets, tiles, concrete or asbestos, and walls made of burnt bricks, concrete or stones. *Semi-permanent structure*: Semi-permanent is the term used here for a mix of permanent and traditional building materials. *Traditional structure*: Traditional structures are those made from traditional housing construction materials. These materials are taken from common natural resources – unfired mud brick, grass thatching for roofs, rough poles for roof beams (NSO, 2010).

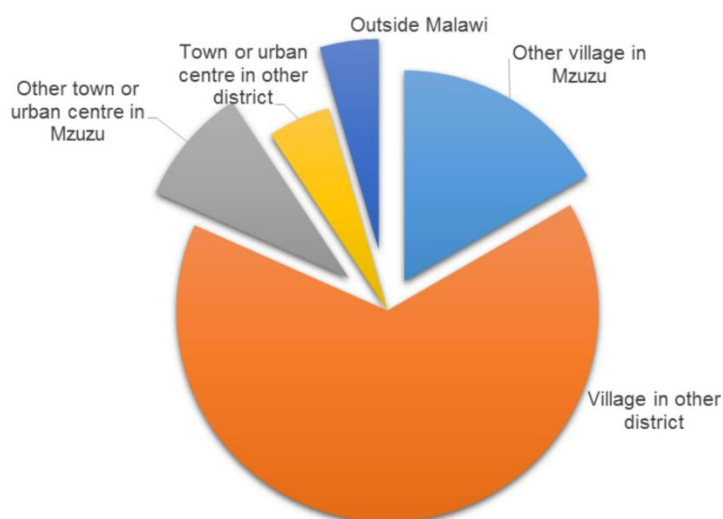


Figure 4: Origin of Mzuzu city residents as per the IHS3 data

Several key informants mentioned deficiencies in planning and enforcement of the city's regulations as root causes of flood disasters. Although some bye-laws on how land can be used and disposed of are in place, these, apart from being outdated, are rarely enforced. Building inspectors are present in the city but city officials cited inadequate numbers and limited resources as main reasons for failing to regulate settlements and construction in the city. Several key informants felt the city council is to blame for the large numbers of informal settlements. In the words of one city official:

I believe the city had little control over the people in the beginning and people were free to choose where to live without considering what might happen to them in the future. Had it been the city was in full control at the beginning, we would not be talking of these things at this point in time.

However, the Chief Executive Officer (CEO) for the city argued the council is not to blame for the proliferation of informal settlements and pushed the blame to local leaders and democracy:

The city never allowed people to settle in risky areas. However, change of political dimension from single party to multiparty democracy led to free-for-all land sharing in the cities of Malawi, including Mzuzu. Another factor is the continued existence of traditional leaders who are still allocating land in the city

Conflicts over land with local leaders within the city and also from the neighbouring districts are common, where most of the land is customary. Customary land is controlled by local leaders, which poses challenges to the city. The city has a committee in place that is responsible for land allocation and regulating developments. However, conflicts are common between the committee and local leaders in the allocation and utilisation of the land. City officials claimed there have been several cases where local leaders have sold land that belongs to the city. In extreme cases, these conflicts have culminated in destruction of structures constructed by the city in places local leaders argue are theirs. Several key informants cited the city's location between two districts as contributing to these conflicts and also hampering its efforts to reduce disaster risks.

Another vulnerability factor to floods stems from uncollected household, market and other solid waste which block the already inadequate drainage channels. In some cases, waste is dumped in rivers and streams within the settlements, thereby affecting the flow of water in times of rains and leading to floods. During transect walks in Masasa and Mchengautuwa, solid waste could be seen dumped in drainages, close to homes and markets and in rivers and streams. In addition, the survey data shows that 90 percent of the population in the city rely on forest solid products (firewood and charcoal) as fuel for cooking, with only 9.9 percent using electricity. Key informants cited this over-reliance on forest products to have largely contributed to the deforestation of Kaning'ina, the largest forest in the city. This, in turn, has led to siltation of rivers and eventual flooding during rainy seasons.

3.2 Disaster risk reduction efforts and challenges

City officials and other key informants mentioned a number of policy and practical challenges affecting disaster risk reduction efforts. While the city recognises that it is exposed to multiple hazards, efforts to reduce disaster risks are limited. The mayor for the city stated

that challenges in reducing disaster risks range from inadequate financial resources to institutional challenges. He acknowledged that in view of climate change and frequent occurrence of disasters, the city has to change its mind-set and start mainstreaming climate change and disaster risk reduction in its plans. In the words of the head of one NGO:

Major threats include conceptual challenges as disasters have often been response driven – so DRR requires considerable changes in thinking; and financial challenges - allocating scarce resources from development budgets for the realization of DRR can be quite a challenge, given the many competing demands we have.

The city does not have any disaster risk management or adaptation plan or strategy. A disaster risk management plan drafted in 2014 was still not finalised by early 2017.

Focus group participants and key informants highlighted the lack of support from central government and NGOs to urban areas in disaster risk reduction or adaptation. This, as argued by a city official, makes the urban poor face the consequences of shocks and stresses on their own. The survey data shows that most households (46 percent) rely on own savings to respond to the shocks they face, while 11 percent get support from relatives and friends. Up to 38 percent do nothing when shocks strike, while only one percent get help from government. In Malawi, the urban poor are often not included in safety nets and government's food insecurity response programmes on the presumption that urban areas are 'better off'. The methodology used by the Malawi Vulnerability Assessment Committee, which conducts annual assessment of food insecurity to identify households that would require food aid, does not include urban areas.

Concentration on rural areas by central government and other players also means that urban managers are ill-prepared for disaster risk management not just in terms of technical capacity but also in coordination structures at different scales. Mzuzu city does not have any officer employed for disaster risk management purposes. Instead, an officer who is a public

health worker acts as a desk officer. The city level disaster risk management committee has been dormant and only became active when the 2016 floods struck. Below the city level, such committees do not exist. In both Masasa and Mchengautuwa, committees that had been set up to coordinate camps at the time of the floods were still active post-displacement. The national tools used for disaster assessment are also skewed towards rural areas. City officials and NGOs indicated that they had challenges to adapt the tools to the urban context during the 2016 floods and ended up not capturing some indicators. Responding to a question on why urban areas have been ignored, a senior government officer from the Department of Disaster Management Affairs (DoDMA) said:

Urban areas had been neglected for a long time because the view, based on disaster trends, had been that disasters occur in rural areas... Lately, we have seen an increased occurrence of disasters such as floods in urban areas. It is because of this trend that DoDMA has started focusing on building capacity of urban councils in DRM. There is need for urban councils to acquire knowledge in disaster prevention, mitigation, preparedness, response as well as recovery. There is also need to establish DRM structures in the urban areas so that they can assist in the coordination of DRM activities.

But what risk reduction efforts are underway in the city? The city's CEO and mayor cited rehabilitation of drainage systems, fund-raising campaigns towards disaster risk reduction activities, reforestation and plans to relocate some households from high risk areas as some of the activities the city is undertaking to reduce disaster risks. In reaction to the 2016 floods, central government officials and NGOs also indicated they plan to implement several DRR activities in the city. These include establishing local DRM committees in the wards, recruitment of full time DRM officer, training of city officials in DRM and finalising the city's DRM plan.

There are other alternative pathways to resilience building being explored in other informal settlements within the city by non-state actors from a developmental perspective. These are being done without government's financial support. For instance, the United

Nations Human Settlement Programme (UN-HABITAT) partnered with a local NGO and other players to implement a pilot participatory slum upgrading project in Salisburyline, one of the informal settlements. Salisburyline was one of the most affected settlements by the 2016 floods. It is located on the lower part of the city, where most of the drainage systems and natural gullies from upper areas drain into. As an informal settlement, the city does not offer waste collection services. The pilot project, therefore, aimed at addressing these challenges. It has already improved the drainage system, in addition to providing other social amenities. For instance, communities have formed groups that collect waste from households and markets and convert them into composite manure, which they also sell. This has enhanced income generation and agricultural production, improved the sanitation and drainage systems in the area and reduced flood risk. It was observed during transect walks in Salisburyline that it had a more organised solid waste disposal arrangement, with littering controlled as compared to Masasa and Mchengautuwa.

3.3 Reducing disaster risks through voluntary resettlement

As one way of reducing flood disaster risks, a voluntary resettlement programme is being implemented by the city council. Though considered as a long-term preventive measure, the 2016 floods appear to be the major driving force behind the city's decision. The city has identified the most at risk household from those displaced by the floods. Each of the selected household is being offered a plot of land and the household would have to find its own means of constructing houses at the new site.

There are a number of issues that the city council and communities are grappling with in the planning and execution of the resettlement programme. One of the most prominent challenges is that the city does not 'own' any idle land, yet those that are to resettle expect the city to provide them with land. When the city wants land for development, it applies to the

Department of Lands. The city has negotiated with the Department of Lands and has been allocated land for the resettlement of about 1000 households. Communities and other key informants consider the figure to be inadequate compared to those that should be resettled.

Another issue concerns renters, who are estimated to account for around 50% of the displaced. City officials indicated that renters are not going to benefit from the resettlement programme. They argue that renters do not own the land or houses they occupy and have the option of finding houses to rent elsewhere. Some of the renters informally interviewed felt sidelined by government and argued that they had taken the risk to rent houses in disaster-prone areas because they had no other alternatives. It was observed during data collection that most renters occupied dilapidated houses.

Using a flood displaced household as the unit in determining who to resettle is bringing other complexities. Some landlords own and let out more than one house. In some instances, the landlord does not stay in the same community or city. The size of plot is also not uniform. The city argues there could also be a group of people that own several houses but only one or two were affected. With the city's plan to only allocate one plot per household, some landlords expressed reluctance to move. On the other hand, the city also fears that such landlords may accept a new plot in the new location but continue reconstruction in the old area. In addition, not all houses were affected, or equally affected by the floods. The city indicates that it is not implementing a wholesale resettlement programme and those whose houses were affected but their land 'looks good' are being advised to reconstruct in the same location.

Discussions with community members and city officials revealed that two camps have emerged among the population, with some willing and others not interested in resettling. Paradoxically, city officials claimed they are receiving death threats from both camps. Those with established assets and businesses appear more unwilling to move. Most of the affected

households are involved in informal small-scale businesses and they trade within or close to their communities. The household survey shows that 29 percent of the households in the city own some form of non-agriculture business enterprise, with the majority of the businesses (95 percent) selling produce directly to consumers. 43 percent of these are trading in the local market places while 28 percent do their businesses within their homestead. Resettling away would mean that they re-establish their enterprises in new markets, which most claimed is a challenge. In the words of a small-scale businessman interviewed during transect walks: “I do my business mostly with people I know or from within my area. If I move away, it will take time to find customers and I will suffer.”

To demonstrate their unwillingness to move, some of those targeted for resettlement were observed reconstructing in the same risky areas, using the same designs and without regard to building back better or safer. Some house owners, with no technical skills in construction, were observed working on their houses. One house owner interviewed in Masasa said:

We have been staying in camps and now that am back home, what I need most is a roof over my head and that of my family. I don't have money to pay anyone to build for me. I can also not wait for government as they take long to assist or will never come at all.

Those calling for speedy allocation of land are accusing the city of holding ulterior motives, arguing city officials want to allocate the land to themselves or their friends. Other city officials suspect that some rich people and other elites are instigating the people to demand more land so that they can later buy it. A number of what communities consider deserving households have been left out, while some people have irregularly been allocated more than one plot. Participation of the displaced community in the resettlement planning was very limited, with city officials undertaking the whole process and only coming to the

communities during registration. A local councillor from Masasa was quoted in the media, claiming:

People are surprised that the council secretariat conducted registration but did not involve anybody including block leaders from the area. Therefore, they suspect some officials from the council plan to sell the other plots which are in the name of one person (Kalimira, 2017).

This has forced some people to reject the whole resettlement process. City officials feel the community's lack of resources to construct houses on their own is the reason for their unwillingness to relocate. Some participants also echoed these sentiments, arguing that since the city is not constructing houses for them or offering any form of compensation, they may end up destitute when they move.

4.0 Discussion

4.1 Resettle or not resettle?

For most developing countries, structural disaster mitigation measures may remain out of reach. Where protective options are limited, resettlement of population from high risk areas could be the most convenient option. Resettlement can be an effective way of preventing future disasters as it can entirely eliminate the likelihood of a disaster. However, as other studies have shown, when implemented arbitrarily, it can create more serious threats whose consequences could be more severe than the disasters being prevented (Oliver-Smith, 1991; Cernea, 1997, 2000; Carmona and Correa, 2011). The Mzuzu resettlement process lacks core ingredients of a successful resettlement scheme demonstrated by several studies (Correa et al., 2011; Arnall, 2013; Artur and Hilhorst, 2014; Vlaeminck et al., 2016; Chen et al., 2017; Keraminiyage & Piyatadsananon, 2013; Usamah & Hyaden, 2012). For instance, by just focusing on provision of land with no other form of support, it raises questions not just about

livelihood impacts but increases the likelihood that those with no resources to reconstruct would end up selling the land and get cheaper places in the same risky areas.

Since evidence from the integrated household survey shows that city residents rely more on social networks than on government, the selective resettlement arrangements may further increase levels of vulnerability. Cernea (1997, 2000) cautions planners to desist from implementing resettlement schemes that would lead to community disarticulation. Breaking down of social networks that are key to resilience will affect the overall resilience of the communities. Selective resettlement may also attract others to come and occupy the land that has been abandoned. For a city known for failing to enforce its laws and regulations, this likelihood remains high. Ignoring renters who may be equally or more vulnerable also seems retrogressive. Elsewhere, renters have been identified as among the most powerless and invisible informal settlement dwellers: they lack capacity to organise themselves and take collective action and are also most likely not to take adaptive action against climate shocks and stresses (Davis, 2006; Isunju et al., 2016).

As other scholars have argued (Carmona and Correa, 2011; Arnall, 2013; Ferris, 2015; Chen et al., 2017; Mavhura et al., 2017) and like any other risk reduction measures, resettlement should not be considered as a standalone intervention that does not speak to other risk management and development strategies of a country or an area such as housing, roads, markets and utilities. For others, the need for income sustainability is often more important than that of physical protection from hazards (Tadgell et al., 2017). The reluctance to move by those running small-scale businesses attest to this. As shown by the study, some of the shocks households experience in the city are linked to income earning capacity and ability to access food. In the end, resettlement should not just be seen as a process that has moved people out of risky areas but should also be judged by how it has sustainably restored people's lives and livelihoods. Achieving this requires full participation of the whole

community in planning and decision making. Decisions about where to resettle, when to resettle, how to resettle and what resources and opportunities would be available to those resettling for them to reconfigure their lives and livelihoods cannot just be left in the hands of authorities. Failing to involve the community can also stimulate distrust and give room to accusations of corrupt practices as is being claimed by community members in the city.

4.2 Are there alternatives?

While attractive, resettlement will minimally address the risks that Mzuzu city residents face. It could offer immediate and temporary mechanical fixes to floods for a few households. Vulnerability to disasters is often about the elements that individuals and societies have, such as houses, farms, levels of education, gender, age, poverty, natural resources and livelihoods (Wisner et al., 2004; Adger, 2006; Arnall, 2015). This paper has presented some of the key drivers of vulnerability to floods in the city. These include unsafe construction practices, poor drainage systems, unregulated solid waste disposal, institutional incapacity, inadequacy of land, settlements in high risk areas, deforestation, siltation of rivers and national disaster risk reduction policies that neglect urban areas. Not only is the emphasis on resettlement failing to address these underlying drivers of vulnerability, but it is also obscuring them. Resettlement is also creating new forms of vulnerability for those being resettled and those left behind. Moreover, with 60% of Mzuzu's population living in informal settlements, the resettlement programme would cover only around 4%.

The fourth priority area in the Sendai Framework for Disaster Risk Reduction, 2015-2030, emphasises on building back better in post-disaster recovery (UN-ISDR, 2015). While it is recommended to encourage communities in high risk areas to construct better houses or build back better after a disaster, this study has shown that it may be quixotic for most of the

urban poor. Most people in informal settlements are migrants from rural villages who simply do not have the means to afford better housing on their own. Previous studies have also shown that during recovery phase, residents will often not wait for city plans to start the reconstruction phase and will reconstruct basing on their capabilities, without regard to resilience (Oliver-smith and Goldman, 1988; Wamsler, 2004; Miles et al., 2012). The evidence from Mzuzu also confirms the observation by Wamsler (2004) that those reconstructing after a disaster sometimes build in the same risky areas. Where the reconstruction process is not guided by risk assessments or technical support, it is likely to not just reproduce the old risks but also create additional risks. In the event that a decision has been made to reconstruct in the same area after a disaster, appropriate technical and financial support should be provided to those who need to reconstruct in order to build back better and safer.

Development of legislation, building codes and urban plans that integrate disaster risk reduction is another important step in tackling the underlying causes of vulnerability. Addressing the causes of vulnerability requires a developmental approach (Wisner et. al., 2004; Manyena, 2012; Islam, 2015; Oliver-Smith, 2016), hence the need to mainstream DRR across all sectors within the city. Among others, this would ensure proper settlement patterns and construction practices. However, even if relevant legislation and policies that have integrated DRR are in place, it would not automatically translate into resilient cities without being implemented or enforced. The institutional capacity of the city itself to manage risks but also enforce laws and regulations needs to be strengthened. This requires substantial investment in human capacity and other core areas. Particularly, presence of full time personnel with disaster risk reduction or climate adaptation responsibilities is an important step.

While prohibiting settlement in risky areas may be another alternative (Tippel, 2006), this should be a priority in high risk areas that have not yet been occupied. In the case of Mzuzu, where the majority of its citizenry already occupy hazardous places, proper planning and improvements should be made in situ to reduce disaster risks. This 'living with floods' approach has been widely promoted by UN agencies such as UN-HABITAT, NGOs and other donors in Malawi. Arnall (2015) also reported on the same in the case of Mozambique. Slum upgrading programmes like the one implemented by UN-HABITAT in the city are encouraging developments. The advantage with slum improvement programmes is that they also factor in social aspects aimed at community development (Baker, 2012). Such initiatives should also aim at promoting locally-appropriate and resilient house construction practices in areas exposed to hazards. However, programmes of this nature require strong political and institutional commitment as well as active community participation. Evidence on the ground in Malawi indicates that financial support for such initiatives from government has not been forthcoming.

As was observed in some locations in the city, sometimes residents tend to underestimate or deny their levels of vulnerability to disasters. Without any disaster occurring, they can remain ignorant of the risks they are exposed to or choose to live in denial. Public awareness programmes on disaster risk reduction among city dwellers should also be prioritised.

5.0 Conclusion

This paper has raised a number of questions that urban areas should consider as they undertake risk reduction programmes. In the case of resettlement, these range from land shortfalls to decisions on who should actually be resettled, when and how. These questions

are key to understanding resettlement complexities in urban areas in developing countries and could assist in designing better resettlement programmes. The paper has called for caution when considering risk reduction options, and has argued that resettlement should remain a measure of the last resort. Forcing or enticing people to resettle when the core system is disorganised does not appear to be the best way of reducing disaster risks. Indeed, cases where resettlement has failed are more common than where it has succeeded. The Mzuzu case may just end up as another addition to the catalogue of resettlement failures. Within a system that has a tendency to take no action when people disregard its policies and laws, there is no guarantee that those being resettled would not return, or that the land left behind would not be reoccupied, or that the allocated land would not be sold.

In the face of poverty and other social ills in most developing countries, urban areas will continue offering pull factors for rural households. As this paper and other previous studies have demonstrated, most of these rural migrants end up occupying the most delicate spaces. Countries will have to make tough policy choices if the risks are to be brought to manageable levels. Allowing people to stay in unsafe informal settlements without any protection cannot be considered a logical decision. By their nature, some environments such as wetlands are supposed to be protected as they also act as natural flood controls. With the likelihood of increasing urban risk in the face of climate change and climate variability and rapid population growth, compounded by tough economic conditions, low-income countries may need to invest more in integrating disaster resilience in the normal urban planning and development processes. As the PAR model shows, the focus should be on addressing the physical, social, economic, political and human conditions that are at the centre of vulnerability to floods and other disasters.

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Conflict of interest

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